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LISTS OF SPECIES

Distribution and composition of butterfly species along the latitudinal and habitat gradients of the Western Ghats of India

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ABSTRACT: Distribution of butterfly species along the latitudinal and habitat gradients of the Western Ghats was studied. The Western Ghats was divided into 14 latitude zones and the species diversity in each latitude zone, along with habitats of their occurrence, were studied using the data from literature survey for the entire Western Ghats as well as data from personal observations in the areas between 14°N to 20°N latitudes. Out of 334 species recorded from the Western Ghats, 58 species were found in all latitudinal zones, while 5 species were reported in only one latitudinal zone. Further, southern Western Ghats consisted of more number of species and more number of genera as compared to northern Western Ghats. Latitudinal zones between 10°N to 12°N had most of the Western Ghats endemic species. Habitat wise distribution of species revealed three significant clusters grossly separated by the level of human disturbance. Evergreen forest habitats supported maximum number of species endemic to the Western Ghats.

INTRODUCTION

The Western Ghats (WG) of India, considered as one of the biodiversity hotspots (Myers *et. al.* 2000), is rich in fauna and flora with many endemic species. However, out of 182,500 sq. km of primary forest in the Western Ghats-Sri Lanka, only 6.8% of primary forest cover exists today (Myers *et al.* 2000) and even the existing forests are declining rapidly (Jha *et al.* 2000). This rapid loss of forests, and hence biotic diversity, is an irreversible environmental threat (Mittermeier *et al.* 1998). Study of species distribution patterns in such threatened areas may help in the design and implementation of conservation strategies to avoid any further loss of these biological resources, which is of a major concern (Gunawardene *et al.* 2007).

Butterflies are suitable for biodiversity studies, as the taxonomy, geographic distribution and status of many species are relatively well known. Further, butterflies are good biological indicators of habitat quality as well as general environmental health (Larsen 1988; Kocher and Williams 2000; Sawchik *et al.* 2005), as many species are strictly seasonal and prefer only particular set of habitats (Kunte 1997). Butterflies may react to disturbance and change in habitat and act as an ecological indicator (Mac Nally and Fleishman 2004; Fleishman *et al.* 2004). They may get severely affected by the environmental variations and changes in the forest structure, as they are closely dependent on plants (Pollard 1991; Blair 1999). Thus minor changes in their habitat may lead to either migration or local extinction (Blair 1999; Kunte 2000b; Mennechez, Schtickzelle and Baguette 2003). Because of their dependence on the plants, butterfly diversity may reflect overall plant diversity in the given area (Padhye *et al.* 2006). Thus, change in land use pattern may lead to landscape changes that can reflect into change in butterfly diversity and distribution. As a result, butterflies can also be used as umbrella species (the species whose protection serves to protect many co-occurring species) for conservation planning and management (Fleishman *et al.* 2000; 2001; Betrus *et al.* 2005).

Another reason why butterflies might be used as model organisms, especially in the WG, is the recent surge in the literature on the diversity, habitat usage and conservation of butterflies (Gaonkar 1996; Kunte 2000b; Kehimkar 2008; Kunte 2008b; Kunte, in press). As a result, ample of information on the butterflies on the WG is available. Nevertheless, our understanding of the fine scale patters of latitudinal distribution of butterflies within the WG is still limited. While Gaonkar (1996) gives state wise distribution of the butterflies of the WG, Kunte (2008b) has provided distribution in four zones of the WG. Studying the distribution of butterflies at the finer scale within the WG will be important to identify local biodiversity hotspots within the WG.

In this paper we have surveyed the latitudinal and habitat wise distribution of butterflies by collecting data from literature since 1886 till date and our sporadic field surveys in the northern WG. We have given a detailed analysis of butterfly diversity along the latitudinal and habitat gradient along the WG. Implications of our study for the conservation are also discussed.

MATERIALS AND METHODS

Study area: The Western Ghats

WG run continuously parallel to the west coast of India between 8°N - 22°N, ending in south of Gujarat State, traversing a length of about 1600 km (Figure 1). Spread over an area of about 175,000 sq. km, this mountain range

contains remaining tropical rain forests on its slopes. There are hills from 1000m ASL to 2000m ASL altitude, between 8°N - 13°N and 18°N - 19°N. The Nilgiris, Palnis and Anamalais are the only stretches of this mountain range with altitude over 2000m ASL. The northern portion of the range is at lower elevations than the southern portion. The WG receives much of its rain from the south-west monsoon, hence June to October are generally wettest season. However, the northern portion of the range is generally dryer than the southern portion, as the southern portion also receives north-eastern/return monsoon during November and December. Average annual rainfall on the WG is 2500 mm. The dry periods south of 13° N are 2–5 months while in the north it varies from 5 to 8 months. Mean temperature ranges between 20° to 24° C, frequently shooting beyond 30° C during summer (April–May) and sometimes falling to almost 0° C during winter in the high altitude hilly regions (Dahanukar *et al.* 2004).

Data collection from literature survey

Data on the presence of different butterfly species in the 14 latitudinal zones (Figure 1), their habitat of occurrence and food plant preference was collected from the literature (Appendix 1). Conservation values for the butterflies were adapted from Kunte (2008b), which are defined based on four criteria – (1) Global distribution: varies from highest 10 points for narrow distribution in WG to lowest one point for occurrence in 3 or more zoogeographical regions, (2) Local distribution in the WG: varies from highest 10 points for restricted to only southern region to lowest 2 points for presence in northern and central regions only, (3) Status in the WG: varies from highest 10 points for rare and patchy distribution to lowest 1 point for abundant and wide spread species, (4) Habitat preference: varies from highest 10 points for low and mid elevation evergreen and semi evergreen forests to lowest 1 point for diverse habitat types. The conservation value for a species is the sum of the scores for all 4 above mentioned criteria with maximum score of 40 and minimum score of 5. While the conservation values were taken from Kunte (2008b), for *Chilades putli* (Eastern Grass Jewel), which is not mentioned in Kunte (2008b), conservation value was assigned as 14 based on the same criteria.

Data collection from field survey

Apart from the literature survey, we also conducted some field surveys between 14°N-20°N latitude (Table 1), the region for which very scanty data is available in published literature except for 18° to 19°N (see Figure 1). Field data was collected by conducting random surveys by all out search method, when butterflies are most active, i.e. in the morning 0900h to 1100h and evening 1530h to 1730h. Butterflies were identified in the field with the help of field guides (Gunathilagaraj *et al.* 1998; Kunte 2000). Specimen collection was strictly avoided.

Unpublished data for Sahyadri Tiger Reserve, Amboli, Agumbe, Satara, Bangalore, Mumbai, Phansad, Dajipur and Gaganbavda were available from personal communications

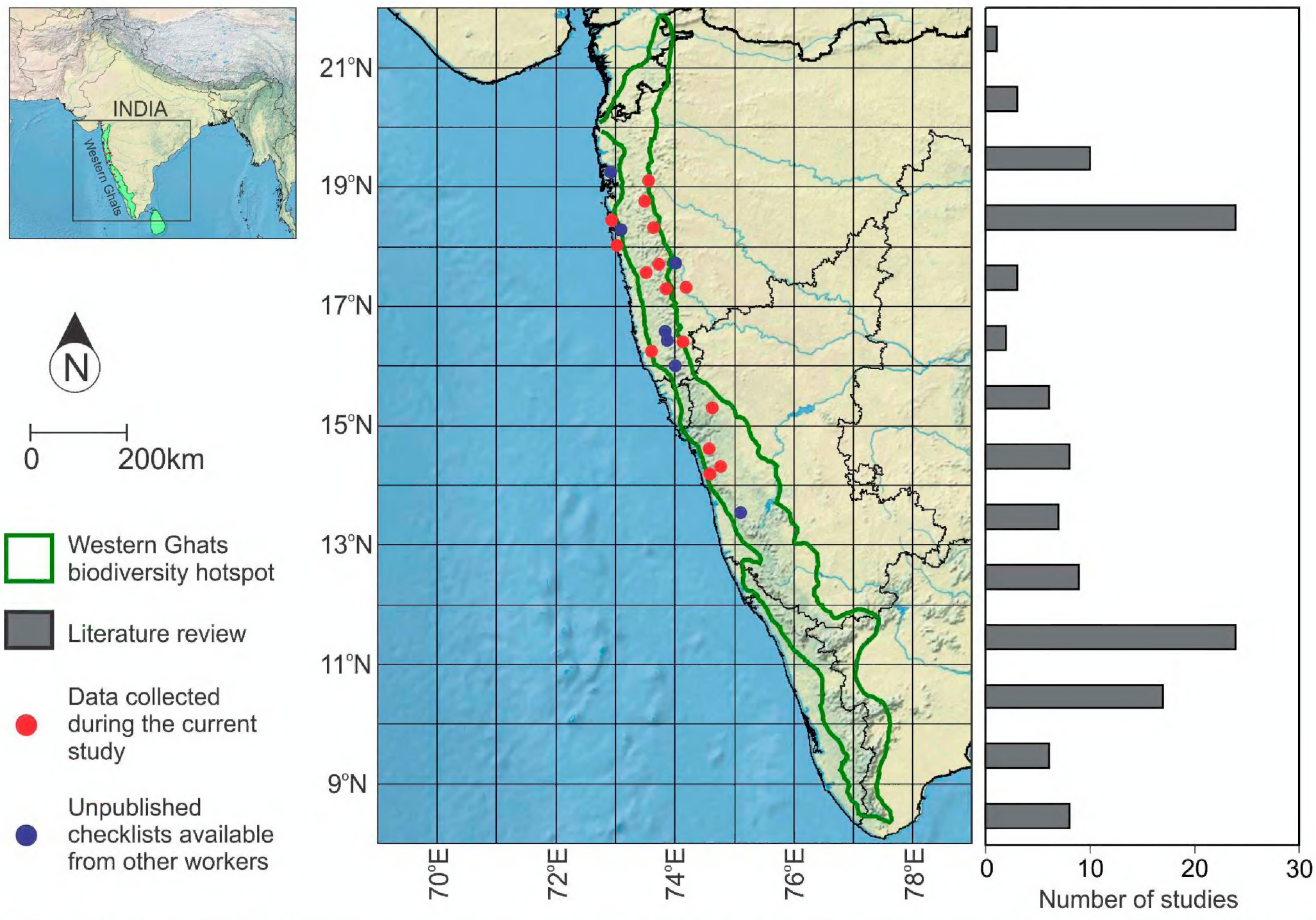

Figure 1. Study area and the latitudinal zones. Bar chart of number of studies in the literature survey includes only the checklists and distributional records. Multiple papers based on the same study are considered together as one. Note that a single study may span over more than one latitudinal zone. Additional checklists available from current study and unpublished surveys are shown as filled circles on the map.

with Rohan Bhate, Hemant Ogle, Kishen Das, Milind Bhakre, Harsha Kumar, Zeeshan Mirza, Rajesh Sanap, Naik and Ankur Patwardhan. Butterfly species distribution data compiled by all the above mentioned methods and subsequently used for the analysis is given as Appendix 2.

Data analysis

We prepared dendrograms based on Bray-Curtis distances for clustering to analyze the latitudinal and habitat wise distribution of the butterflies using PAST (Hammer *et al.* 2001). Bootstrap values were estimated for 1000 replicates. We used chi-square test of independence to find out whether the family wise distribution of species was dependent on latitudinal zones, habitat types and host plant preference. Correspondence Analysis was performed as a convenient method to visualize contingency table created by considering number of butterfly species of each family in different latitudinal zones, habitats and associated with host plant families with PAST (Hammer *et al.* 2001). Box plot were prepared in SigmaPlot® 10.

Table 1. Locality details of additional field surveys done in the current study.

LOCALITY	COORDINATES	
	LATITUDE	LONGITUDE
Bhimashankar	19°07' N	73°54' E
Kamshet – Lonavla	18°46'01" N	73°33'09" E
Phansad	18°25'12" N	72°56'00" E
Velha	18°17'47" N	73°38'15"
Harihareshwar	17°59'51" N	73°01'14" E
Vasota	17°40'19" N	73°43'18" E
Chiplun	17°31'48" N	73°31'12" E
Chandoli	17°13' N	73°50' E
Bhambarwadi	17°17'11" N	74°10'53" E
Nadhavde	16°22'38" N	74°7'38" E
Belane	16°13'23" N	73°35'57" E
Amboli	15°57'53" N	74°00'13" E
Dandeli	15°15'38" N	74°36'56" E
Yana-Sirsi	14°35'22" N	74°33'59" E
Kattlekan	14°17'12" N	74°45'40" E
Bachchudi	14°05'59" N	74°35'59" E

Results and Discussion

Analysis of data suggests that WG of India is rich in butterfly species with 334 species, belonging to 6 families and 164 genera. Lycaenidae was the most representative family with 101 species followed by Nymphalidae (97), Hesperiidae (82), Pieridae (34), Papillionidae (19) and Riodinidae (1). Out of 334 species recorded from the Western Ghats, 58 species were found in all latitudinal zones, while 5 species were reported in only one latitudinal zone.

A detailed account of butterfly species diversity in the WG is given in Kunte (2008b) and when compared with this study, our list has one additional species in the family Lycaenidae, namely *Chilades putli*, which was considered as a subspecies of *Chilades trochylus* by Kunte (2008b). However, currently *Chilades putli* is considered as a distinct species (Ghorpade and Kunte 2010).

Latitudinal distribution of the butterflies

We found a general trend of relatively less number of species (less than 200) between 8°N - 10°N latitudes and 16°N - 22°N latitudes while more number of species (more than 200) between 10°N - 16°N latitudes (Table 2 and Appendix 2). There were 58 species of butterflies which were distributed throughout the WG out of which one, *Kallima horsfieldi*, is endemic to this region. On the other hand, five species, viz. *Apharitis acamas*, *Pelopidas thrax*, *Potanthus Confucius*, *Potanthus palnia* and *Thoressa sitala*, were restricted to only one of the latitudinal zones. Out of these, *Potanthus palnia* is endemic to the WG while other species have a wider global distribution though they are restricted to only one latitudinal zone along the WG. However, *Aeromachus dubius*, *Pelopidas thrax*, and *Thoressa sitala* have a higher conservation value (31, 29 and 35 respectively) according to Kunte (2008b) and thus are important from conservation point of view.

Maximum number of species (95% of the total species) inhabit 11°N - 12°N latitudinal zone, which has the Nilgiris - an East West Mountain range. However, maximum number of WG endemic butterfly species were found in 10°N - 11°N latitudinal zone (94% of the total endemics).

Table 2. Latitudinal distribution of species according to their families.

Latitudinal extent (°N)	Total Species (S = 334)	Western Ghats Endemics (WGE = 33)	FAMILY WISE NUMBER OF SPECIES (ENDEMICS)					
			Papilionidae S = 19 (WGE = 5)	Pieridae S = 34 (WGE = 3)	Nymphalidae S = 97 (WGE = 12)	Lycaenidae S =101 (WGE = 3)	Hesperiidae S = 82 (WGE = 10)	Riodinidae S = 1 (WGE = 0)
8 – 9	178	20	18 (05)	15 (02)	73 (09)	36 (02)	35 (02)	01 (00)
9 –10	173	18	14 (04)	15 (02)	68 (08)	39 (02)	36 (02)	01 (00)
10 – 11	314	31	19 (05)	32 (03)	93 (11)	95 (03)	74 (09)	01 (00)
11 – 12	319	30	19 (05)	31 (03)	91 (09)	99 (03)	78 (10)	01 (00)
12 – 13	288	25	19 (05)	29 (01)	85 (10)	89 (02)	65 (07)	01 (00)
13 – 14	163	13	19 (05)	22 (01)	64 (05)	25 (01)	32 (01)	01 (00)
14 – 15	265	16	18 (05)	28 (01)	81 (04)	79 (02)	58 (04)	01 (00)
15 – 16	263	15	18 (05)	27 (01)	76 (03)	82 (02)	59 (04)	01 (00)
16 – 17	112	02	09 (00)	14 (00)	44 (02)	29 (00)	15 (00)	01 (00)
17 – 18	189	10	16 (05)	25 (01)	63 (04)	53 (00)	31 (00)	01 (00)
18 – 19	186	07	12 (02)	24 (01)	59 (02)	58 (01)	32 (01)	01 (00)
19 – 20	166	03	12 (01)	25 (00)	51 (02)	46 (00)	31 (00)	01 (00)
20 – 21	162	03	10 (00)	25 (00)	50 (02)	48 (01)	28 (00)	01 (00)
21 – 22	159	02	10 (00)	25 (00)	48 (01)	49 (01)	26 (00)	01 (00)

This zone contains the Palni and Anamalai hill ranges. Latitudinal distribution of butterfly species of different families suggests that latitudinal zones between 10°N - 14°N harbour all species of Papillionidae known from WG. Maximum number of species belonging to Pieridae were found in 10°N - 11°N latitudes (32 species) followed by 11°N - 12°N latitudes (31 species) and both had all three WG endemic species of this family. Maximum number of species of Nymphalidae were present between 10°N - 11°N (93 species) latitudes followed by 11°N - 12°N latitudes (91 species) , however maximum WG endemic species of this family (11 species) were present between 10°N - 11°N latitudes followed by 12°N - 13°N latitudes (10 species). In Lycaenidae, maximum species were present in 11°N - 12°N latitudes (99 species) followed by 10°N - 11°N (95 species) and both had all three WG endemics from this family. Maximum number of species (78) as well as maximum number of WG endemic species (10) of Hesperiidae were present in 11°N - 12°N latitudes (Table 2).

Dendrogram depicting the similarity in species composition between latitudes (Figure 2a) showed two clusters one for the southern WG between 8°N - 16°N and another for the northern WG between 17°N - 22°N. The southern cluster is further roughly divided in three zones 8°N - 10°N, 10°N - 13°N and 14°N - 16°N. Latitudinal zone 13°N - 14°N, however showed low similarity from rest of the southern WG cluster. Northern WG cluster had only one well defined zone between 20°N - 22°N, while other zones had very less similarity.

Family wise distribution of the species was significantly dependent on the latitudinal zones (chi square = 70.048, *df* = 52, *P* = 0.048) when we considered *Plum judy* from family Riodinidae together with family Lycaenidae (based on previous classification). This was necessary since Riodinidae had only one species distributed in the WG. Correspondence analysis (Figure 2b) of latitudinal distribution of butterfly families suggested that, as compared to the other families, Pieridae was more predominant in northern WG (16°N - 22°N), Hesperiidae was predominant in southern WG (10°N - 16°N). Nymphalidae and Papillionidae were both predominant in 8°N - 10°N and 13°N - 14°N latitudes, while families Lycaenidae and Riodinidae were omnipresent.

Patterns of distribution of butterfly species agree with other taxa such as micromolluscs (Aravind *et al.* 2008), amphibians (Daniels 1992), fish (Dahanukar *et al.* 2004) and bats (Korad *et al.* 2007) studied in a similar manner where in the latitudinal species distribution along the WG is discussed. These studies also showed higher species diversity as well as endemism in the southern WG (south of 14°N) as compared to those in the northern WG. Gaonkar (1996) has compiled the data on butterfly species distribution along the WG however, the analysis is restricted to the wider latitude ranges at the state level (i.e. occurrence in six political states *viz.* Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujrat).

In the latitudinal distribution of the butterflies, we noticed that the latitudinal range between 10°N - 16°N harboured 325 species, which is 97.3% of the total number of species in the entire WG. Higher floristic and habitat diversity south of 16°N latitudes in WG (Ramesh and Pascal 1997; Ramesh 2001; Gimaret-Carpentier *et al.* 2003; Davidar *et al.* 2005) could be important factors leading to the higher diversity of butterflies in this area. In the north of 16°N latitude the floristic component and the forest types are relatively less diverse (Ramesh and Pascal 1997). This could be one of the reasons for lower butterfly species diversity in the northern WG. Low number of species in the northern parts of the WG is less likely to be due to variations in number of studies and this can be revealed by the comparison of two representative latitudinal zones, 11°N-12°N and 18°N-19°N. Both these latitudinal zones have equal number of studies and still the southern region (11°N -12°N) has 96% of the total WG butterfly species, while the northern region (18°N-19°N) has only 56% of the total WG butterfly species (Figure 1, Table 2).

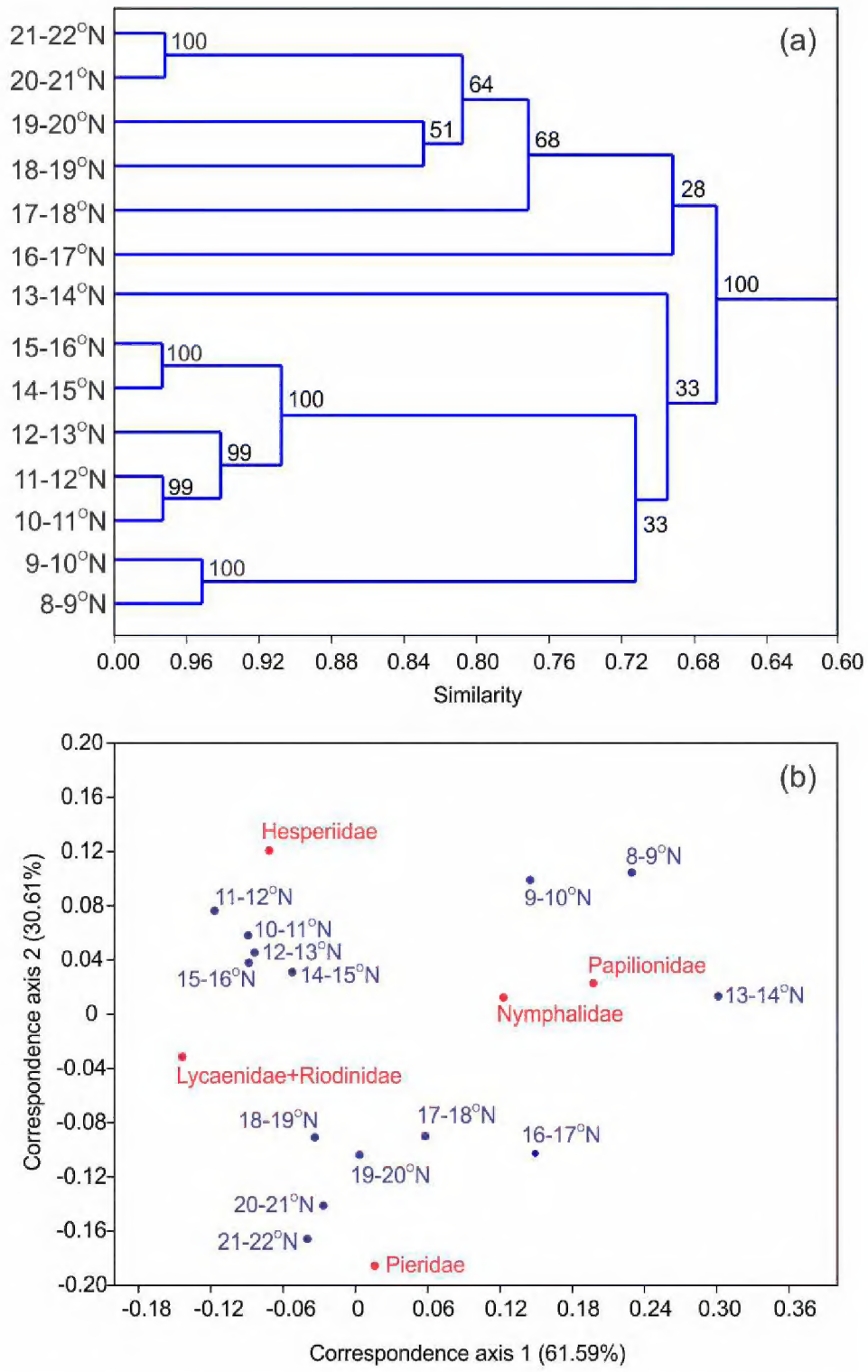

FIGURE 2. Latitudinal distribution of butterflies (a) dendrogram depicting the clustering of different latitudinal zones based on shared species and (b) correspondence analysis of latitudinal distribution of families.

(2001), Wynter-Blyth (1944a, 1944b, 1945, 1947) and Yates (1935).

Habitat wise distribution of the butterflies

Distribution of species in different habitats (Table 3, Appendix 2) suggested that the maximum number of species were present in evergreen forests (78%) followed by deciduous (58%) and riparian (37%) habitats. Maximum number of WG endemic species were found in evergreen forests (29 species) followed by grasslands (9 species) and riparian and deciduous with four species each. A total of 143 species were present only in one of the habitats out of which 19 species were WG endemics. Out of these 19 endemic species, 16 were present only in the evergreen forests while three were restricted to grasslands. Most species of Papillionidae and all of its endemics occurred in evergreen forests. Members of Pieridae occurred in both evergreen forests and deciduous patches, while the endemic species of this family occurred in evergreen forests and grasslands. Members of Nymphalidae, Lycaenidae and Hesperiidae occurred in evergreen forests and deciduous habitat. Results of our analysis are consistent with the earlier reports by Kunte *et al.* (1999) and Kunte (2008b). (For the detailed analysis of habitat preference by WG butterfly species see Kunte, 2008b).

Dendrogram depicting the similarity in species composition between habitats (Figure 3a) showed two distinct clusters comprising of - (1) evergreen, deciduous and riparian habitats and (2) grassland, scrubs, hill slopes, degraded, agricultural and urban habitats. First cluster mentioned above was separated from the second cluster with greater dissimilarity depicting sharing of less number of species among these habitats.

Habitat wise distribution of the butterflies suggests that the undisturbed natural habitats such as evergreen forests, deciduous forests and riparian patches show maximum richness of total as well as endemic species, which is consistent with Kunte *et al.* (1999), Kunte (2008b) and Kunte (in press). The cluster analysis emphasises this fact by separating these habitats in to a distinctly separated clades. The habitats such as scrubs and grasslands show lower richness as compared with the undisturbed habitats as they are marginally disturbed due to cattle grazing and other minor anthropogenic activities. The disturbed habitats such as hill slops, agricultural lands and urban

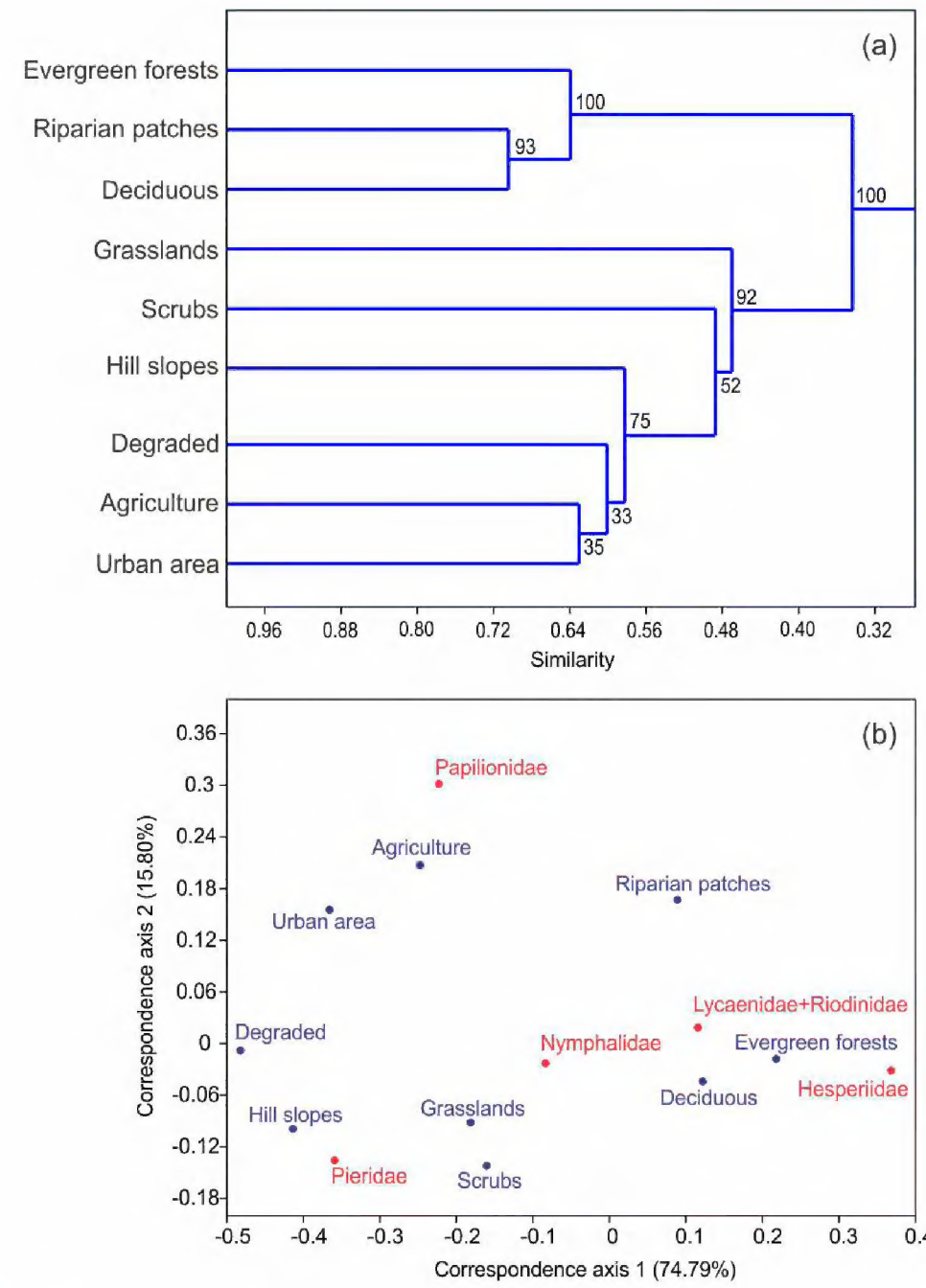

FIGURE 3. Habitat wise distribution of butterflies (a) dendrogram depicting the clustering of different habitats based on shared species and (b) correspondence analysis of habitat wise distribution of families.

habitats on the other hand show very less richness with no endemic species perhaps due to the change in the land use pattern and subsequent changes in the original landscape. Kunte (2008b) has also mentioned the marked absence of endemic species in dry open habitats such as deciduous forests, scrubs and savannas, which are a result of recent anthropogenic alterations.

Family wise distribution of the species was significantly dependent on the habitat types (chi square = 61.79, $df = 32$, $P = 0.0006$). Correspondence analysis (Figure 3b) of habitat wise distribution of butterfly families reveals the following facts – (1) Hesperiidae, Lycaenidae and Riodinidae were predominant in evergreen, deciduous and riparian habitats as compared to other butterfly families. (2) Pieridae was

TABLE 3. Habitat wise distribution of species according to their families.

Habitat	Total Species (S = 334)	Western Ghats Endemics (WGE = 33)	FAMILY WISE NUMBER OF SPECIES (ENDEMICS)					
			Papilionidae S = 19 (WGE = 5)	Pieridae S = 34 (WGE = 3)	Nymphalidae S = 97 (WGE = 12)	Lycaenidae S =101 (WGE = 3)	Hesperiidae S = 82 (WGE = 10)	Riodinidae S = 1 (WGE = 0)
Evergreen forests	262	29	17 (05)	23 (02)	84 (10)	74 (03)	63 (09)	01 (00)
Grasslands	080	09	07 (01)	16 (02)	28 (05)	17 (00)	12 (01)	00 (00)
Deciduous	194	04	12 (02)	23 (00)	59 (02)	61 (00)	38 (00)	01 (00)
Degraded	034	01	04 (00)	07 (00)	16 (01)	06 (00)	01 (00)	00 (00)
Scrubs	084	01	05 (01)	16 (00)	30 (00)	23 (00)	10 (00)	00 (00)
Riparian patches	124	04	14 (02)	09 (00)	41 (02)	38 (00)	21 (00)	01 (00)
Agriculture	041	02	07 (01)	07 (01)	13 (00)	09 (00)	05 (00)	00 (00)
Urban area	051	02	08 (01)	10 (01)	17 (00)	13 (00)	03 (00)	00 (00)
Hill slopes	045	01	04 (00)	10 (01)	19 (00)	10 (00)	02 (00)	00 (00)

predominant in scrub, grassland, hill slope and degraded habitats as compared to other butterfly families. (3) Papilionidae was predominant in urban and agricultural habitats as compared to other butterfly families, and (4) Nymphalidae was present in all habitats.

The correspondence analysis of Butterfly family distribution with respect to the host plant families revealed significant host plant preference by different butterfly families (chi square = 932.72, df = 380, $P < 0.0001$). Both Papillionidae and Pieridae showed preference for specific host plant families as compared to Lycaenidae, Hespiriidae, Riodinidae and Nymphalidae, who preferred more diverse set of host plant families (Figure 4).

It has been suggested that the human interference leads to the ecotone effects, increases the microhabitats and vegetation associated with disturbance, leading to higher diversity of butterflies (Devy and Davidar 2001; Padhye *et al.* 2006). However, our current analysis suggests that the effect is more on a local scale. While in a global scenario for the entire WG, the disturbed habitats such as scrubs, grasslands, hill slops, agricultural lands and urban habitats) do not support high diversity as compared to the evergreen forests, deciduous forests and riparian patches.

Conservation Implications

Latitude wise conservation values of the butterflies (Figure 5a) suggest that the average conservation values of butterflies in southern WG (8°N to 16°N) are more than the average conservation values for northern WG (16°N to 20°N). While, the habitat wise conservation values of the butterflies (Figure 5b) shows that the average conservation value of butterflies found in the evergreen forests was more than any other habitat, followed by riparian patches, deciduous forests, grasslands and scrubs. Degraded habitats such as agricultural lands, urban areas and hill slopes harboured butterflies with relatively lower conservation values.

Kunte (2008b) has discussed the threat and conservation issues of butterfly species in the WG. In our study we have further analysed the species distribution data to go to the finer dimensions and identify the areas of WG for prioritizing the conservation efforts. Our analysis suggests that latitudinal range 10°N - 12°N has maximum average conservation value and it harbours maximum number of species as well as maximum number of endemic species. Thus this latitudinal range should be given more intensive conservation efforts on the top

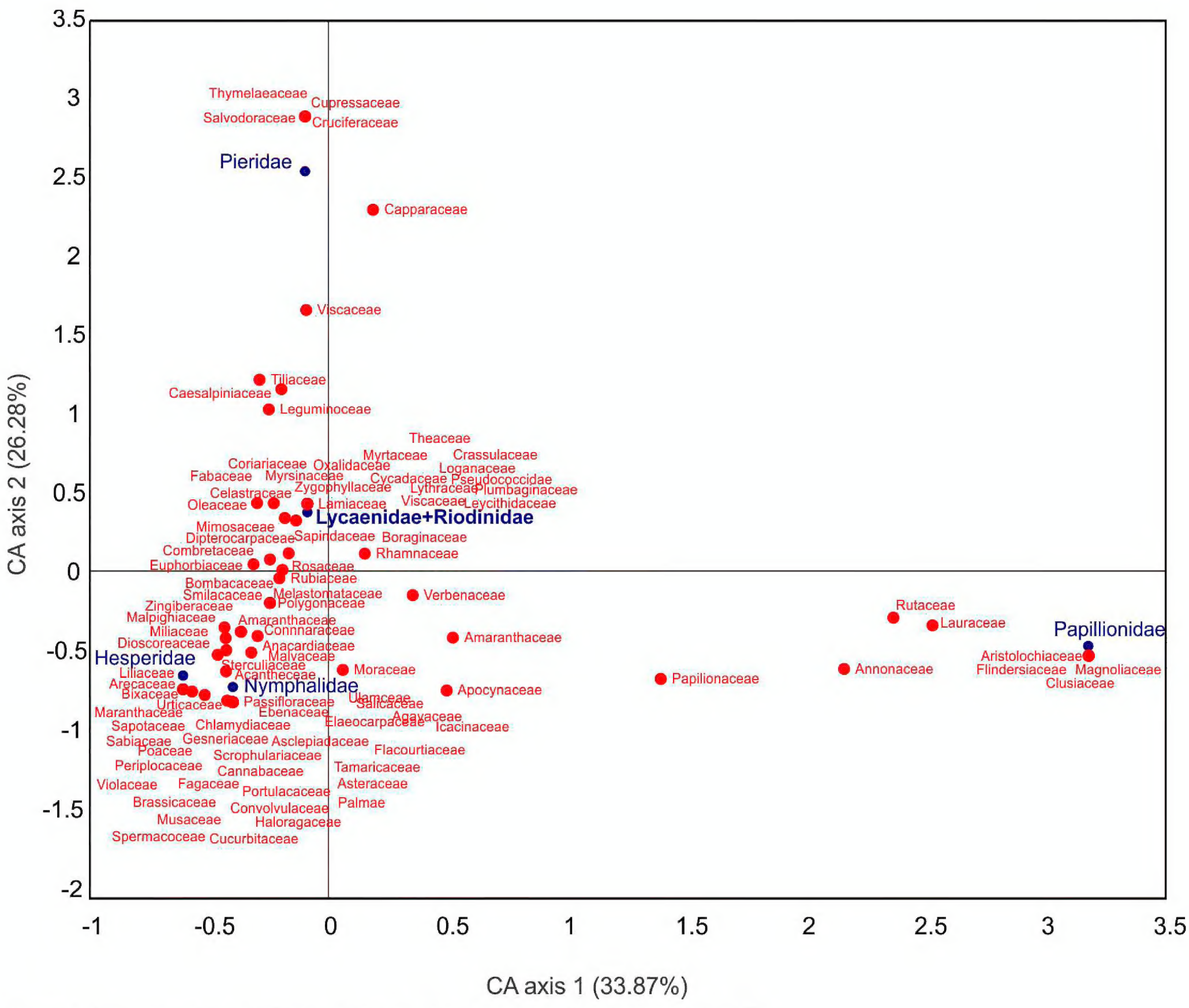

FIGURE 4. Correspondence analysis of host plant family preference for different butterfly families.

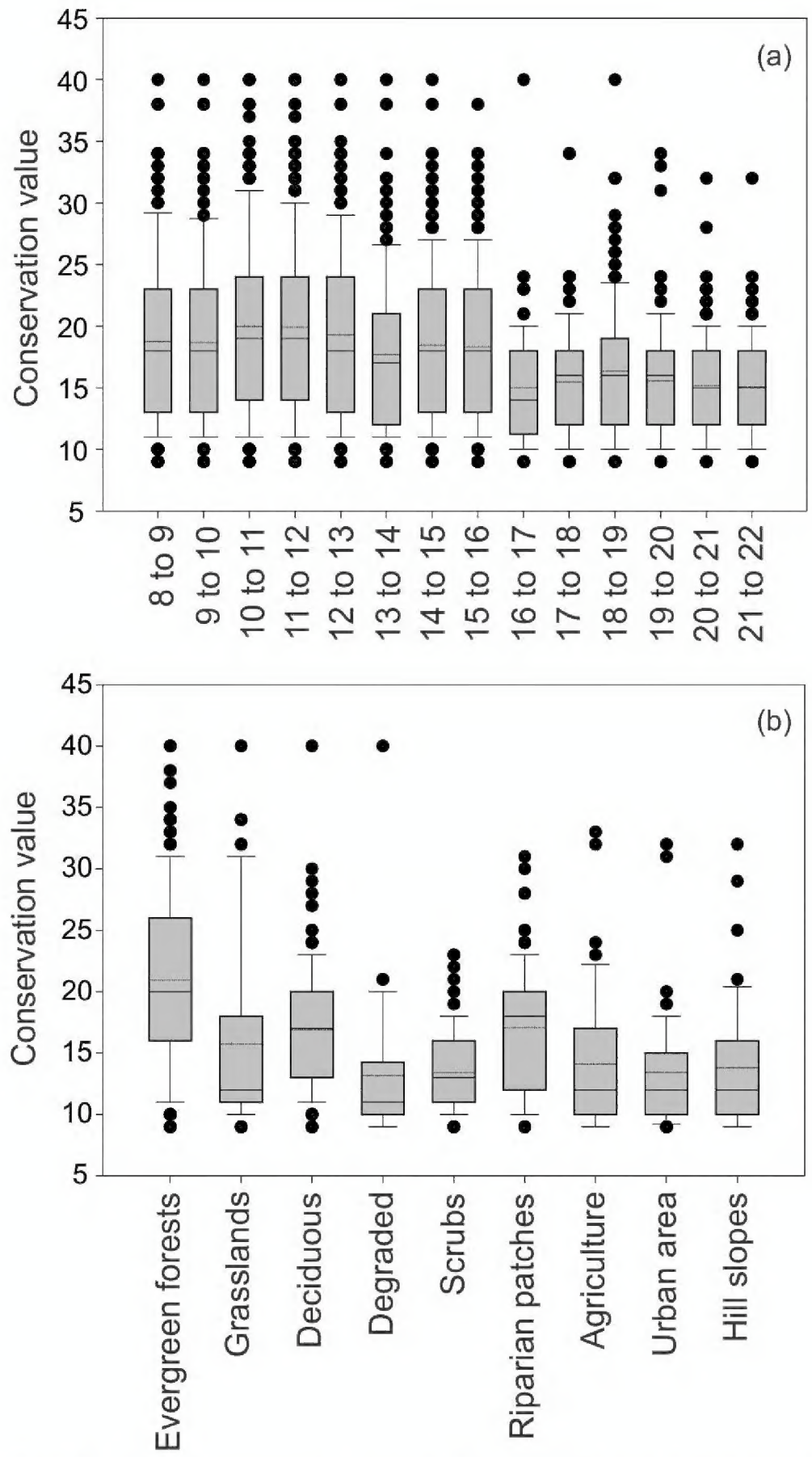

FIGURE 5. Latitude wise (a) and habitat wise (b) distribution of conservation values for butterflies. Dashed line inside the box is mean and solid line is the median. Filled circles are outliers.

most priority. Habitat wise distribution of the butterfly species suggests that evergreen forests, deciduous forests and riparian patches should be on the topmost priority for the conservation efforts followed by the scrubs and grasslands. Conservation of these priority habitats in the priority latitude zones will not only ensure conservation of butterflies, but also other surrogate taxa.As butterflies are useful indicator of habitat quality and can also act as umbrella species for conservation planning and management (Fleishman *et al.* 2000; 2001; Betrus *et al.* 2005); our analysis along with the conservation values assigned by Kunte (2008b) may help in assigning the Umbrella species as well as surrogate or indicator species status to different butterfly species or species groups. Further efforts on these lines, using the criteria described by various workers (Blair 1999; Fleishman *et al.* 2000; Nally and Fleishman 2004; Betrus *et al.* 2005; Fleishman *et al.* 2005), are essential for the biodiversity conservation in Western Ghats. Monitoring the status of such focal species in high priority areas that are mentioned above is a shortcut for developing conservation strategies as conservation of these species ensures conservation of large no of species even across the taxa and hence helps conservation of overall biodiversity of the area under management (Blair 1999; Fleishman *et al.* 2000; Sawchik *et al.* 2005).

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Appendix 1. References used of the compilation of data on distribution, habitat occupancy and food plant preference.

REFERENCE	DATA TYPE		
	DISTRIBUTION	HABITAT	FOOD PLANT
Abdulali 1973	+	-	-
Abdulali 1980	+	-	-
Abdulali 1982	+	-	-
Aitken 1886	+	-	-
Aitken and Comber 1904a	+	-	-
Aitken and Comber 1904b	+	-	-
Amala *et al.* 2011	+	-	+
Ambrose and Raj 2005	+	+	+
Andheria 2001	+	-	-
Anon 1960	+	-	-
Arun and Azeez 2003	+	-	-
Arun 2003	+	-	-
Babjan and Archana 1998	+	-	-
Balakrishnan *et al.* 2006	-	-	+
Bean 1968	+	+	+
Bean 1988	+	+	+
Best 1953	+	-	-
Best 1955	+	-	-
Best 1956	+	-	-
Best 1978	+	-	-
Betham 1894	+	-	-
Bhalodia *et al.* 2002	+	-	-
Bhopale and Athavale 2009	+	+	-
Binoy and Mahew 2004	+	-	-
Chakrabarti and Gurung 2005	+	-	-
Chaturvedi and Haribal 1992	-	-	+
Chaturvedi and Satheesan 1979a	-	-	+
Chaturvedi and Satheesan 1979b	+	-	-
Chaturvedi *et al.* 2005	+	+	-
Davidson *et al.* 1897a	+	+	+
Davidson *et al.* 1897b	+	+	+
Davidson *et al.* 1897c	+	+	+
Davidson *et al.* 1898d	+	+	+
Devy and Davidar 2001	+	+	-
Dolia *et al.* 2008	+	-	-
Eswaran and Pramod 2005	+	-	-
Evans 1910	+	-	-
Evans 1932	+	-	-
Evans 1949	+	-	-
Fergusson 1891	+	+	-
Florence 1927	+	-	-
Gaonkar 1996	+	-	-
Ghorpade and Kunte 2010	+	-	-
Ghosh and Chaudhury 1986	+	-	-
Ghosh *et al.* 1990	+	-	-
Gunathilagaraj *et al.* 1997a	+	-	-
Gunathilagaraj *et al.* 1997b	+	-	-
Gunathilagaraj *et al.* 1998	+	+	+
Hannyngton 1916	+	-	-
Kalesh and Prakash 2007	-	-	+
Kehimkar 2008	+	+	+
Kishendas 2007	-	-	+
Komarpant and Borkar 2004	+	+	-
Krishnakumar *et al.* 2008	+	+	-
Kunte 1997	+	-	-
Kunte 2000a	+	+	-
Kunte 2000b	+	+	+

Appendix 1. ***Continued.***

REFERENCE	DATA TYPE		
	DISTRIBUTION	HABITAT	FOOD PLANT
Kunte 2005	-	+	+
Kunte 2006	-	-	+
Kunte 2008a	+	+	+
Kunte 2008b	-	+	-
Kunte *et al.* 2008	+	-	-
Larsen 1987a	+	+	+
Larsen 1987b	+	+	+
Larsen 1987c	+	+	+
Larsen 1988	+	+	+
Lovalekar *et al.* 2011	+	+	-
Mathew and Binoy 2002	+	-	+
Mathew and Rahamathulla 1993	+	+	-
Mathew *et al.* 2003	+	-	-
Mohan *et al.* 2003	+	-	+
Mohandas 2004	+	-	-
Nair 2001	+	-	-
Nair 2002a	+	-	-
Nair 2002b	+	-	-
Nair 2004	+	-	-
Nair 2005a	-	-	+
Nair 2005b	-	-	+
Nalini 1996	+	-	-
Nayak *et al.* 2004	+	+	-
Nimbalkar *et al.* 2011	+	+	+
Padhye *et al.* 2006	+	-	-
Palot 1998	+	-	-
Palot and Abdurahman 2003	+	-	-
Palot *et al.* 2005	-	-	+
Palot and Radhakrishnan 2001	-	-	+
Palot and Radhakrishnan 2006	-	-	+
Palot and Radhakrishnan 2008	+	+	-
Pramod Kumar *et al.* 2007	+	-	-
Radhakrishnan and Lakshminarayanan 2001	+	+	-
Radhakrishnan and Palot 2006	+	+	-
Radhakrishnan and Palot 2007	+	+	-
Radhakrishnan and Sharma 2002	+	+	-
Radhakrishnan 2000	+	+	-
Rae 1939	+	-	-
Rajagopalan 2005a	+	-	-
Rajagopalan 2005b	-	-	+
Rane and Ranade 2004	+	+	-
Rangnekar and Dharwadkar 2009	+	+	+
Raut and Pendharkar 2010	+	-	-
Reuben 1960	+	+	+
Rufus and Sabarinathan 2007	+	-	-
Sarkar *et al.* 2011	+	-	-
Senthilmurugan 2005	+	+	+
Shahabuddin 1997	+	+	+
Sharma and Borkar 2008	+	-	-
Sharma and Chaturvedi 2006	+	-	-
Sharma 2005	+	-	-
Sharma 2009	+	-	-
Shull 1963	+	-	-
Soniya and Palot 2002	+	-	-
Sreekumar and Balakrishnan 2001	+	-	-
Srivastava 1998	+	-	-
Sudheendrakumar *et al.* 2000	+	+	-
Susanth 2005a	+	+	+
Susanth 2005b	-	-	+
Ugarte and Rodricks 1960	+	-	-
Venkatesha 2004	-	-	+
Watson 1890	+	-	-
Wirth 2004	+	-	-
Wynter-Blyth 1944a	+	+	-
Wynter-Blyth 1944b	+	+	-
Wynter-Blyth 1945	+	+	-
Wynter-Blyth 1947a	+	-	-
Wynter-Blyth 1947b	+	-	-
Xavier 2006	+	-	+
Yates 1933	+	-	-
Yates 1935	+	-	-
Yates 1944	+	+	-

Appendix 2. List of butterflies with the latitudinal and habitat wise distribution.

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **													HABITAT PREFERENCE **								
PAPILIONIDAE																							
Graphium agamemnon	Tailed Jay	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	-	-	-	RP	-	UA	-
G. antiphates	Five-Bar Swordtail	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
G. doson	Common Jay	a	b	c	d	e	f	g	h	-	j	-	l	-	-	EF	-	DS	-	-	RP	-	-	-
G. nomius	Spot Swordtail	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	HS
G. sarpedon	Common Bluebottle	a	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	-	-	-	RP	AG	UA	-
Pachliopta aristolochiae	Common Rose	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	GL	DS	DE	SC	RP	AG	UA	HS
P. hector	Crimson Rose	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	RP	AG	-	-
P. pandiyana ***	Malabar Rose	a	b	c	d	e	f	g	h	-	j	k	-	-	-	EF	GL	-	-	-	-	-	-	-
Papilio buddha ***	Malabar Banded Peacock	a	-	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	RP	-	UA	-
P. clytia	Common Mime	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
P. crino	Common Banded Peacock	-	-	c	d	e	f	-	-	-	-	-	-	-	-	-	-	DS	-	SC	-	-	-	-
P. demoleus	Lime	a	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	-	RP	AG	UA	HS
P. dravidarum ***	Malabar Raven	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
P. helenus	Red Helen	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	RP	AG	-	-
P. liomedon ***	Malabar Banded Swallowtail	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	DS	-	-	-	-	-	-
P. paris	Paris Peacock	a	-	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	DE	-	RP	-	UA	-
P. polymnestor	Blue Mormon	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	RP	-	UA	-
P. polytes	Common Mormon	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Troides minos ***	Southern Birdwing	a	b	c	d	e	f	g	h	-	j	k	l	-	-	EF	-	DS	-	SC	RP	AG	-	-
PIERIDAE																								
Appias albina	Common Albatross	-	-	c	d	e	f	g	h	-	j	k	l	m	n	EF	-	DS	-	-	RP	-	UA	-
A. indra	Plain Puffin	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	-	-	-	-	-	-	-
A. lalage	Spot Puffin	a	b	c	-	-	-	-	-	-	-	-	-	-	-	EF	GL	DS	-	-	-	-	-	-
A. libythea	Striped Albatross	a	b	c	d	e	-	g	h	-	-	k	l	m	n	-	-	DS	-	SC	-	-	-	-
A. lyncida	Chocolate Albatross	-	-	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	DE	-	RP	-	-	-
A. wardii ***	Lesser Albatross	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
Belenois aurota	Pioneer Or Caper White	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	-	SC	-	-	-	-
Catopsilia pomona	Common Emigrant	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
C. pyranthe	Mottled Emigrant	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	-	HS
Cepora nadina	Lesser Gull	a	-	c	d	e	f	g	h	-	-	-	l	-	-	EF	-	-	-	-	-	-	-	HS
C. nerissa	Common Gull	-	-	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	DE	SC	-	-	UA	-
Colias nilagiriensis ***	Nilgiri Clouded Yellow	a	b	c	d	-	-	-	-	-	-	-	-	-	-	EF	GL	-	-	-	-	AG	UA	HS
Colotis amata	Small Salmon Arab	-	-	c	d	e	-	g	h	-	j	k	l	m	n	-	GL	DS	-	SC	-	-	-	HS
C. danae	Crimson Tip	-	-	c	d	e	f	g	h	-	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
C. etrida	Small Orange Tip	-	-	c	d	e	f	g	h	-	j	k	l	m	n	EF	GL	DS	-	-	-	-	-	-
C. eucharis	Plain Orange Tip	a	b	c	d	e	-	g	h	-	j	k	l	m	n	-	GL	-	-	SC	-	-	-	-
C. fausta	Large Salmon Arab	-	-	c	d	e	-	g	h	-	-	-	l	m	n	-	-	DS	-	-	-	-	-	-
C. phisidia	Blue-Spotted Arab	-	-	-	-	-	-	-	-	-	-	-	-	m	n	-	-	DS	-	-	-	-	-	-
C. vestalis	White Arab	-	-	-	-	-	-	-	-	-	-	-	-	m	n	-	-	DS	-	-	-	-	-	-
Delias eucharis	Common Jezebel	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **														HABITAT PREFERENCE **								
Eurema andersonii	One-Spot Grass Yellow	-	-	c	d	e	f	-	-	-	j	-	-	-	-	EF	GL	-	-	-	-	-	-	-
E. blanda	Three-Spot Grass Yellow	-	-	c	d	e	f	g	h	-	j	k	l	m	n	EF	GL	DS	DE	SC	RP	-	-	-
E. brigitta	Small Grass Yellow	-	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	-	-	UA	-
E. hecabe	Common Grass Yellow	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
E. laeta	Spotless Grass Yellow	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
E. nilgiriensis ***	Nilgiri Grass Yellow	-	-	c	d	-	-	-	-	-	-	k	-	-	-	-	GL	-	-	-	-	-	-	-
Hebomoia glaucippe	Great Orange Tip	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	HS
Ixias marianne	White Orange Tip	-	-	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	AG	UA	HS
I. pyrene	Yellow Orange Tip	-	-	c	d	e	f	g	h	-	j	k	l	m	n	EF	-	DS	-	SC	RP	-	-	HS
Leptosia nina	Psyche	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	UA	-
Pareronia ceylonica	Dark Wanderer	-	-	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
P. valeria	Common Wanderer	-	-	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	-	SC	-	-	UA	-
Pieris canidia	Indian Cabbage White	-	b	c	d	e	-	g	-	-	j	k	l	-	-	EF	GL	-	-	-	-	AG	-	-
Prioneris sita	Painted Sawtooth	-	-	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
NYMPHALIDAE																								
Acraea violae	Tawny Coster	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	UA	-
Amathusia phidippus	The Palmking	-	b	c	-	-	-	-	-	-	-	-	l	-	-	-	-	-	-	-	-	AG	-	-
Argynnis hyperbius	Indian Fritillary	-	-	c	d	-	-	g	-	-	-	-	-	m	n	EF	GL	DS	-	-	RP	-	-	-
Ariadne ariadne	Angled Castor	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
A. merione	Common Castor	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Athyma nefte	Color Sergeant	-	-	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-
A. perius	Common Sergeant	a	b	c	d	e	f	g	h	i	j	k	l	-	-	EF	GL	DS	-	SC	-	-	-	-
A. ranga	Blackvein Sergeant	a	-	c	d	e	f	-	h	i	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
A. selenophora	Staff Sergeant	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Byblia ilithyia	Joker	-	-	c	d	e	f	g	h	-	j	k	l	m	n	-	-	DS	DE	SC	-	-	-	-
Cethosia nietneri	Tamil Lacewing	a	b	c	d	e	f	g	h	-	j	k	-	-	-	EF	-	DS	-	-	-	-	-	-
Charaxes bernardus	Tawny Rajah	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	-	DS	-	-	-	-	-	HS
C. solon	Black Rajah	a	b	c	d	e	-	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Cirrochroa thais	Tamil Yeoman	a	b	c	d	e	f	g	h	-	j	-	-	m	n	EF	-	DS	-	-	RP	-	-	HS
Cupha erymanthis	Rustic	a	b	c	d	e	f	g	h	i	j	k	-	-	-	EF	-	DS	DE	-	RP	-	-	-
Cyrestis thyodamas	Common Map	a	b	c	d	e	f	g	h	i	j	k	-	m	n	EF	-	-	-	-	-	-	-	-
Danaus chrysippus	Plain Tiger	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
D. genutia	Striped Or Common Tiger	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Discophora lepida	Southern Duffer	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Doleschallia bisaltide	Autumnleaf	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Dophla evelina	Redspot Duke	a	b	c	d	e	f	g	h	-	j	-	-	m	n	EF	-	-	-	-	-	-	-	-
Elymnias hypermnestra	Common Palmfly	a	-	c	d	e	f	g	h	i	j	k	l	-	-	EF	-	DS	-	SC	-	-	-	-
Euploea core	Common Indian Crow	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
E. klugii	Brown King Crow	a	b	c	d	e	-	g	h	-	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
E. sylvester	Double-Branded Crow	-	-	c	d	e	f	g	h	-	j	k	l	-	-	EF	-	DS	-	SC	-	-	-	HS
Euripus consimilis	Painted Courtesan	a	b	c	d	-	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	-	-	-	-

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **													HABITAT PREFERENCE **								
Euthalia aconthea	Common Baron	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	UA	-
E. lubentina	Gaudy Baron	a	b	c	d	e	-	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
E. nais	Baronet Or Red Baron	-	-	c	d	e	f	g	h	-	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
E. telchinia	Blue Baron	-	-	c	d	-	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Hypolimnas bolina	Great Eggfly	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	RP	-	UA	-
H. misippus	Danaid Eggfly	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	UA	-
Idea malabarica ***	Malabar Tree Nymph	a	b	c	d	e	f	g	h	-	j	-	-	m	-	EF	-	-	-		RP	-	-	-
Junonia almana	Peacock Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	-	-	-	-	RP	-	-	-
J. atlites	Grey Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	-	-	-	-	RP	-	-	-
J. hierta	Yellow Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	-	-	-	RP	-	-	HS
J. iphita	Chocolate Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	RP	AG	UA	HS
J. lemonias	Lemon Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
J. orithya	Blue Pansy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
Kallima horsfieldi ***	South Indian Blue Oakleaf	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
K. inachus	Orange Oakleaf	-	-	-	-	-	-	-	-	-	-	-	-	m	n	EF	-	DS	-	-	RP	-	-	-
Kaniska canace	Blue Admiral	a	b	c	d	e	f	g	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Lethe drypetis	Tamil Treebrown	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
L. europa	Bamboo Treebrown	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
L. rohria	Common Treebrown	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	-	-	-	-
Libythea lepita	Common Beak	-	-	c	d	e	-	-	-	-	j	k	-	m	n	EF	-	DS	-	SC	RP	-	-	-
L. myrrha	Club Beak	a	b	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	DS	-	-	RP	-	-	-
Melanitis leda	Common Evening Brown	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
M. phedima	Dark Evening Brown	a	-	c	d	e	f	g	h	i	j	k	-	-	-	EF	-	DS	DE	-	-	-	-	-
M. zitenius	Great Evening Brown	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	-	-	-	RP	-	-	-
Moduza procris	Commander	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	AG	UA	-
Mycalesis adolphei ***	Redeye Bushbrown	-	-	-	d	e	-	-	-	-	-	-	l	-	-	EF	GL	-	-	-	-	-	-	-
M. anaxias	Whitebar Bushbrown	a	b	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
M. davisoni ***	Palni Bushbrown	a	b	c	d	e	f	g	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
M. igilia ***	Small Longbrand Bushbrown	-	-	c	d	e	-	-	-	i	-	-	-	-	-	EF	-	DS	DE	-	-	-	-	-
M. mineus	Dark Branded Bushbrown	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	GL	DS	-	SC	-	-	-	HS
M. oculus ***	Red-Disc Bushbrown	a	b	c	-	-	-	-	-	-	j	-	-	-	-	EF	GL	-	-	-	-	-	-	-
M. orcha ***	Palebrand Bushbrown	-	-	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
M. patnia	Gladeye Bushbrown	a	b	c	d	e	f	g	h	-	-	-	l	-	-	EF	-	DS	DE	-	RP	-	-	-
M. perseus	Common Bushbrown	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
M. subdita	Tamil Bushbrown	-	-	c	d	e	f	g	-	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
M. visala	Longbrand Bushbrown	-	-	c	d	e	-	-	-	-	-	k	l	m	n	EF	-	-	-	-	-	-	-	-
Neptis clinia	Southern Sullid Sailer	a	b	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	DS	-	-	RP	-	-	-
N. columella	Shortbanded Sailer	-	-	c	d	e	-	-	-	-	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
N. hylas	Common Sailer	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
N. jumbah	Chestnut-Streaked Sailer	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
N. nata	Clear Sailer	a	b	c	d	e	f	g	-	-	-	-	-	-	-	-	GL	DS	-	-	-	-	-	HS

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **														HABITAT PREFERENCE **									
N. soma	Sullied Sailer	a	-	-	d	e	-	-	-	-	j	k	-	-	-	EF	-	-	-	-	-	-	-	-	
N. viraja	Yellowjack Sailer	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
Orsotriaena medus	Nigger	a	b	c	d	e	f	g	h	i	j	-	l	m	-	EF	-	DS	-	-	RP	-	-	-	
Pantoporia hordonia	Common Lascar	a	b	c	d	e	f	g	h	i	j	k	l	-	-	EF	-	-	-	-	-	-	-	-	
P. sandaka	Extra Lascar	-	-	c	-	-	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
Parantica aglea	Glassy Tiger	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	RP	-	-	-	
P. nilgiriensis ***	Nilgiri Tiger	a	-	c	d	e	-	-	-	-	j	k	-	-	-	EF	GL	-	-	-	-	-	-	-	
*Parantirrhoea marshallii****	Travancore Evening Brown	a	b	c	-	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
Parthenos sylvia	Clipper	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-	
Phalanta alcippe	Small Leopard	-	-	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-	
P. phalantha	Common Leopard	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	DE	SC	RP	-	UA	-	
Polyura agraria	Anomalous Nawab	-	-	c	d	-	-	g	h	-	j	-	-	-	-	EF	-	DS	-	SC	-	-	-	-	
P. athamas	Common Nawab	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-	
P. schreiber	Blue Nawab	a	b	c	d	e	f	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-	
Rohana parisatis	Black Prince	-	-	c	d	-	f	g	h	-	j	k	-	-	-	EF	-	-	-	-	-	-	-	-	
Tanaecia lepidea	Grey Count	a	b	c	d	-	f	g	h	i	j	-	l	-	-	EF	-	DS	-	SC	RP	-	-	-	
Tirumala limniace	Blue Tiger	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS	
T. septentrionis	Dark Blue Tiger	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	RP	-	-	HS	
Vanessa cardui	Painted Lady	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS	
V. indica	Indian Red Admiral	a	-	c	d	e	f	g	-	-	j	-	-	m	n	-	GL	-	-	-	-	-	-	-	
Vindula erota	Cruiser	a	b	c	d	e	f	g	h	-	j	-	l	-	-	EF	-	-	-	-	-	-	-	-	
Ypthima asterope	Common Threering	-	-	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	-	SC	-	-	-	-	
Y. avanta	Jewel Fourring	-	-	-	d	-	-	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-	
Y. baldus	Common Fivering	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	RP	-	-	-	
Y. ceylonica	White Or Ceylon Fourring	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	DS	-	SC	-	-	-	HS	
Y. chenui ***	Nilgiri Fourring	a	b	c	d	e	f	-	-	-	-	-	-	-	-	-	GL	-	-	-	-	-	-	-	
Y. huebneri	Common Fourring	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	RP	-	-	-	
Y. philomela	Baby Fivering	-	-	c	d	e	f	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-	
Y. ypthimoides ***	Palni Fourring	a	b	c	-	-	-	-	-	-	-	-	-	-	-	-	GL	-	-	-	-	-	-	-	
Zipaetis saitis ***	Tamil Catseye	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
LYCAENIDAE																									
Acytolepis lilacea	Hampson's Hedge Blue	-	-	c	d	e	f	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
A. puspa	Common Hedge Blue	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-	
Amblypodia anita	Leaf Blue	-	b	c	d	e	-	g	h	i	j	k	l	-	-	EF	-	DS	-	-	RP	-	-	-	
Ancema blanka	Silver Royal	-	-	-	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-	
Anthene emolus	Ciliate Blue	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-	
A. lycaenina	Pointed Ciliate Blue	-	-	c	d	e	-	g	h	-	j	k	-	m	n	EF	-	DS	-	-	RP	AG	-	HS	
Apharitis acamus	Tawny Silverline	-	-	-	-	-	-	-	-	-	-	-	-	-	n	-	GL	-	-	SC	-	-	-	-	
A. lilacinus	Liliac Silverline	-	-	-	d	e	-	-	-	-	-	-	-	-	-	-	GL	-	-	-	-	-	-	-	
Arhopala abseus	Aberrant Oakblue	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	
A. alea ***	Kanara Oakblue	a	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **														HABITAT PREFERENCE **								
A. amantes	Large Oakblue	a	b	c	d	e	-	g	h	-	-	k	l	m	n	EF	-	DS	-	-	RP	AG	-	-
A. atrax	Indian Oak Blue/Dark Broken-Band Oak blue	-	b	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
A. bazaloides	Tamil Oakblue	-	-	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
A. pseudocentaurus	Western Centaur Oakblue	a	b	c	d	e	-	g	h	-	-	k	l	-	-	-	-	DS	-	-	-	-	-	-
Azanus jesous	African Babul Blue	-	-	c	d	e	-	g	h	-	j	k	-	m	n	-	GL	-	-	-	-	-	-	-
A. ubaldus	Bright Babul Blue	-	-	c	d	e	-	g	h	-	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
A. uranus	Dull Babul Blue	-	-	c	d	e	-	g	h	-	j	k	-	m	n	-	GL	-	-	-	-	-	-	-
Bindahara phocides	Plane	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
Caleta caleta	Angled Pierrot	-	-	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
Castalius rosimon	Common Pierrot	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	-	-	UA	-
Catapaecilma major	Common Tinsel	a	b	c	d	e	-	g	h	-	j	k	-	-	-	-	-	DS	-	-	-	-	-	-
Catochrysops panormus	Silver Forget-Me-Not	-	-	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
C. strabo	Forget-Me-Not	a	b	c	d	e	-	g	h	-	j	k	l	m	n	-	-	DS	-	SC	-	-	-	-
Celastrina lavendularis	Plain Hedge Blue	-	-	c	d	-	-	-	-	i	-	-	l	-	-	EF	-	-	-	-	-	-	-	-
Celatoxia albidisca ***	Whitedisc Hedge Blue	a	b	c	d	e	-	-	-	-	-	k	-	m	n	EF	-	-	-	-	-	-	-	-
Cheritra freja	Common Imperial	-	-	c	d	e	f	g	h	-	-	-	l	-	-	EF	-	-	-	-	RP	-	-	HS
Chilades laius	Lime Blue	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	RP	-	UA	HS
C. pandava	Plains Cupid	a	b	c	d	e	-	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
C. parrhasius	Small Cupid	-	-	c	d	e	-	g	h	-	j	k	-	m	n	-	GL	-	-	-	-	-	-	-
C. putli	Eastern Grass Jewel	a	b	c	d	e	f	g	h	i	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
C. trochylus	Western Grass Jewel	-	-	c	d	e	f	g	h	i	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
Chliaria othona	Orchid Tit	-	-	c	d	e	-	g	h	i	j	-	l	-	-	EF	-	-	-	-	-	-	-	-
Creon cleobis	Broadtail Royal	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Curetis dentata	Dentate/Bright/Toothed Sunbeam	-	-	c	d	-	f	-	-	-	-	-	-	m	n	-	-	DS	-	-	-	-	-	-
C. siva ***	Shiva Sunbeam	-	-	c	d	-	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
C. thetis	Indian Sunbeam	-	-	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Deudorix epijarbas	Cornelian	a	b	c	d	e	-	g	h	-	j	k	-	m	n	EF	-	DS	-	-	RP	-	-	-
D. isocrates	Common Guava Blue	a	b	c	d	e	-	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
D. perse	Large Guava Blue	a	b	c	d	e	f	g	h	-	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Discolampa ethion	Banded Blue Pierrot	a	b	c	d	e	-	g	h	-	j	k	-	m	n	EF	-	DS	-	-	RP	-	-	-
Euchrysops cnejus	Gram Blue	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	-	DE	SC	RP	AG	UA	HS
Everes lacturnus	Indian Cupid	-	-	c	d	e	f	g	h	i	j	-	-	-	n	EF	-	DS	-	-	RP	-	-	-
Horaga onyx	Common Onyx	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
H. viola	Violet/Brown Onyx	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Hypolycaena nilgirica	Nilgiri Tit	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Ionolyce helicon	Pointed Line Blue	-	-	c	d	e	-	-	-	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-
Iraota timoleon	Silverstreak Blue	a	b	c	d	e	-	g	h	-	-	k	l	m	n	EF	-	-	-	-	-	-	-	-
Jamides alecto	Metallic Cerulean	-	-	c	d	e	-	-	-	i	j	k	-	-	-	EF	-	DS	-	-	RP	-	-	HS
J. bochus	Dark Cerulean	a	b	c	d	e	f	g	h	i	-	k	l	m	n	-	-	DS	-	-	-	-	UA	-
J. celeno	Common Cerulean	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	-
Lampides boeticus	Pea Blue	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **													HABITAT PREFERENCE **									
Leptotes plinius	Zebra Blue	-	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	RP	-	UA	-
Logania distanti	Dark Mottle	-	-	-	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Loxura atymnus	Yamfly	-	b	c	d	e	f	g	h	i	j	k	l	-	-	EF	-	DS	-	-	RP	-	-	-
Megisba malaya	Malayan	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Nacaduba berenice	Rounded 6-Line Blue	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
N. beroe	Opaque 6-Line Blue	-	-	c	d	e	-	g	h	-	j	k	l	-	-	EF	-	DS	-	-	RP	-	-	-
N. caluria	Dark Ceylon 6-Line Blue	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
N. hermus	Pale 4-Line Blue	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
N. kurava	Transparent 6-Line Blue	-	-	c	d	e	-	g	h	i	j	-	l	-	-	EF	-	DS	-	-	RP	-	-	-
N. pactolus	Large 4-Line Blue	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Neopithecops zalmora	Quaker	a	b	c	d	e	f	g	h	i	j	-	-	m	n	EF	-	-	-	-	-	-	-	-
Petrelaea dana	Dingy Line Blue	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Pratapa deva	White Royal	-	-	c	d	e	-	g	h	-	j	k	l	-	-	EF	-	DS	-	-	RP	-	-	-
Prosotas dubiosa	Tailless Line Blue	-	-	c	d	e	-	g	h	-	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
P. nora	Common Line Blue	-	-	c	d	e	f	-	h	-	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-
P. noreia	White-Tipped Line Blue	-	-	c	d	e	-	g	h	-	-	-	l	-	-	EF	-	-	-	-	-	-	-	-
Pseudozizeeria maha	Pale Grass Blue	-	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Rachana jalindra	Banded Royal	-	-	c	d	e	-	-	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Rapala iarbus	Indian Red Flash	a	b	c	d	e	-	g	h	-	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
R. lankana	Malabar Flash	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
R. manea	Slate Flash	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	-	DS	-	SC	RP	-	-	-
R. varuna	Indigo Flash	-	-	c	d	e	-	g	h	-	j	k	l	-	-	EF	-	DS	-	-	RP	-	-	-
Rathinda amor	Monkey Puzzle	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	-	-	-	-	-	-	-
Spalgis epius	Apefly	a	b	c	d	e	-	g	h	-	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
Spindasis abnormis	Abnormal Silverline	-	-	c	d	e	-	-	-	-	j	k	-	-	-	-	-	DS	-	-	-	-	-	-
S. elima	Scarce Shot Silverline	-	-	c	d	e	-	g	h	-	-	k	-	m	n	-	-	DS	-	-	-	-	-	-
S. ictis	Shot Silverline	-	-	c	d	e	-	g	h	-	j	k	l	m	n	-	-	DS	-	-	RP	-	-	-
S. lohita	Longbanded Silverline	a	b	c	d	e	-	g	h	-	-	k	-	m	n	-	-	DS	-	-	-	-	-	-
S. schistacea	Plumbeous Silverline	-	-	c	d	e	-	g	h	-	j	k	-	-	-	-	-	DS	-	-	-	-	-	-
S. vulcanus	Common Silverline	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	GL	DS	-	SC	RP	-	UA	-
Surendra quercetorum	Common Acacia Blue	a	b	c	d	e	-	g	h	-	-	k	-	m	n	-	-	DS	-	-	-	-	-	-
Tajuria cippus	Peacock Royal	-	-	c	d	e	-	g	h	-	j	k	-	m	n	EF	-	DS	-	SC	-	AG	-	-
T. jehana	Plains Blue Royal	a	b	c	d	e	-	g	h	-	-	k	l	-	-	EF	-	DS	-	-	RP	-	-	-
T. maculata	Spotted Royal	a	b	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
T. melastigma	Branded Royal	-	-	c	d	-	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Talicada nyseus	Red Pierrot	a	b	c	d	e	f	g	h	i	j	k	l	-	-	EF	-	DS	-	SC	-	-	UA	HS
Tarucus ananda	Dark Pierrot	-	-	c	d	e	f	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
T. balkanica	Balkan Pierrot	-	-	-	-	-	-	-	-	-	-	-	-	m	n	-	-	-	-	SC	-	-	-	-
T. callinara	Spotted Pierrot	-	-	c	d	-	-	g	h	-	-	-	-	-	-	EF	-	DS	-	SC	-	-	-	-
T. indica	Pointed Pierrot	-	-	-	d	-	-	-	-	-	-	-	-	m	-	-	-	DS	-	SC	-	-	-	-
T. nara	Rounded/Rusty/Striped Pierrot	-	-	c	d	e	-	-	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-

APPENDIX 2. ***CONTINUED.***

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **													HABITAT PREFERENCE **								
Thaduka multicaudata	Manytailed Oakblue	-	-	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-
Udara akasa	White Hedge Blue	-	-	c	d	e	f	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
U. singalensis	Singalese/Large Hedge Blue	a	b	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Zeltus amasa	Fluffy Tit	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Zesius chrysomallus	Redspot	a	b	c	d	e	-	g	h	-	-	k	l	m	n	-	-	DS	-	-	-	-	-	-
Zinaspa todara	Silverstreaked Acacia Blue	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Zizeeria karsandra	Dark Grass Blue	-	-	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Zizina otis	Lesser Grass Blue	a	b	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	DS	DE	SC	RP	AG	UA	HS
Z. hylax	Tiny Grass Blue	-	-	c	d	e	-	g	h	i	j	k	l	m	n	EF	GL	DS	-	SC	RP	-	UA	-
RIODINIDAE																								
Abisara echerius	Plum Judy	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
HESPERIIDAE																								
*Aeromachus dubius****	Dingy Scrub-Hopper	-	-	c	d	-	-	-	-	-	-	-	-	-	-	-	GL	-	-	-	-	-	-	-
A. pygmaeus	Pygmy Grass/Scrub-Hopper	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Ampittia dioscorides	Bush Hopper	-	-	c	d	e	f	g	h	-	j	-	-	-	-	-	-	-	-	-	RP	-	-	-
*Arnetta mercara ****	Coorg Forest Hopper	-	-	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
A. vindhiana	Vindhyan Bob	-	-	c	d	e	-	g	h	-	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Badamia exclamationis	Brown Awl	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	GL	DS	-	-	-	-	UA	-
Baoris farri	Paintbrush Swift	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
Baracus vittatus	Hampson's Hedge-Hopper	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Bibasis gomata	Pale Green Awlet	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
B. sena	Orange-Tail Awl	-	-	c	d	e	-	g	h	i	-	-	l	-	-	EF	-	DS	-	-	RP	-	-	-
Borbo cinnara	Rice Swift	a	b	c	d	e	f	g	h	i	j	k	l	-	-	EF	GL	DS	-	SC	-	AG	UA	-
Burara jaina	Orange-Striped Awl	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
*Caltoris canaraica ****	Kanara Swift	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
C. kumara	Blank Swift	-	-	c	d	e	-	g	h	i	-	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
C. philippina	Philippine Swift	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Caprona agama	Spotted Angle	-	-	c	d	-	-	-	-	-	-	-	-	-	-	-	-	DS	-	SC	-	-	-	-
C. alida	Spotted Angle	-	-	c	d	-	-	-	-	-	-	-	-	-	-	-	-	DS	-	SC	-	-	-	-
C. ransonnetti	Golden Angle	a	b	c	d	e	-	g	h	-	j	k	l	m	-	EF	-	DS	-	-	-	-	-	-
Celaenorrhinus ambareesa	Malabar Spotted Flat	-	b	c	d	e	f	g	h	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
C. leucocera	Common Spotted Flat	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
C. ruficornis	Tamil Spotted Flat	-	-	c	d	e	-	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Choaspes benjaminii	Indian Awlking	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Coladenia indrani	Tricolour Flat	a	b	c	d	e	f	g	-	i	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Cupitha purreea	Wax Dart	a	b	c	d	-	-	-	-	-	-	k	-	-	-	EF	-	DS	-	-	RP	-	-	-
Erionota thrax	Palm Redeye	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Gangara thyrsis	Giant Redeye	a	b	c	d	e	f	g	h	-	-	k	l	-	-	EF	-	DS	-	-	RP	AG	-	-
Gegenes nostrodamus	Dingy Swift	-	-	-	-	-	-	-	-	-	-	-	-	m	n	-	-	-	-	SC	-	-	-	-
Gerosis bhagava	Common Yellowbreasted Flat	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Gomalia elma	African Mallow/Marbled Skipper	-	-	c	d	e	-	g	h	-	-	k	-	m	-	-	-	DS	-	SC	-	-	-	-

APPENDIX 2. ***CONTINUED.***

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **														HABITAT PREFERENCE **								
Halpe homolea	Indian / Ceylon Ace	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
H. porus	Moore's Ace	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Hasora badra	Common Awl	a	b	c	d	e	-	g	h	-	-	-	l	-	-	EF	-	DS	-	-	RP	-	-	-
H. chromus	Common Banded Awl	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
H. taminatus	White Banded Awl	-	-	c	d	e	f	-	h	-	j	-	-	-	-	EF	-	DS	-	-	-	-	-	-
H. vitta	Plain Banded Awl	-	-	c	d	-	-	g	h	-	j	-	-	-	-	-	-	DS	-	-	-	-	-	-
Hyarotis adrastus	Tree Flitter	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
H. microsticta	Brush Flitter	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Iambrix salsala	Chestnut Bob	a	b	c	d	e	f	g	h	-	j	k	-	m	n	EF	-	DS	-	-	RP	AG	-	-
Matapa aria	Common Redeye	a	b	c	d	e	f	g	h	-	j	k	l	m	n	-	-	DS	-	-	-	-	-	-
Notocrypta curvifascia	Restricted Demon	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
N. paralysos	Common Banded Demon	-	-	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-
Odontoptilum angulata	Chestnut/Banded Angle	-	-	c	d	e	f	g	h	-	j	k	-	-	-	EF	-	DS	-	-	RP	-	-	-
Oriens concinna ***	Tamil Dartlet	-	-	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
O. goloides	Indian/Common Dartlet	a	b	c	d	e	-	-	-	-	j	-	-	-	-	EF	-	DS	-	-	-	-	-	-
Parnara bada	Common Straight Swift	a	b	c	d	e	f	g	h	-	-	k	l	-	-	-	GL	-	-	-	-	-	-	-
P. ganga	Continental Swift	-	-	-	-	-	-	-	-	-	-	-	-	m	n	-	GL	-	DE	SC	-	-	-	-
Pelopidas agna	Dark Branded Swift	-	-	c	d	e	-	g	h	-	-	k	l	-	-	EF	-	-	-	-	-	-	-	-
P. assamensis	Great Swift	-	-	-	-	-	-	-	-	-	-	-	-	m	n	EF	GL	-	-	-	-	-	-	-
P. conjuncta	Conjoined Swift Great Swift	a	b	c	d	e	f	g	h	-	-	k	l	m	n	EF	-	-	-	-	-	-	-	-
P. mathias	Dark Small Branded Swift	-	-	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
P. subochracea	Large Branded Swift	-	-	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-
P. thrax	Pale Small Branded Swift	-	-	-	-	-	-	-	-	-	-	-	-	-	n	-	GL	-	-	-	-	-	-	-
Polytremis lubricans	Contiguous Swift	-	-	c	d	e	-	-	-	-	-	-	-	-	-	EF	-	DS	-	-	RP	-	-	-
Potanthus confucius	Confucian/Chinese Dart	-	-	-	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
P. pallida	Pallied Dart	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
P. palnia	Palni Dart	-	-	-	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	HS
P. pava	Pava Dart	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
P. pseudomaesa	Psuedomaesa/Common Dart	a	b	c	d	e	-	g	h	-	-	-	l	m	n	EF	-	-	-	-	-	-	-	-
Pseudoborbo bevani	Bevan's Swift	-	-	c	d	e	f	g	h	-	j	k	l	m	n	-	GL	-	-	-	-	-	-	-
Psolos fuligo	Coon	a	b	c	d	e	f	-	h	-	-	-	l	-	-	EF	-	-	-	-	-	-	-	-
Psuedocoladenia dan	Fulvous Pied Flat	a	b	c	d	e	f	g	h	-	-	k	l	m	n	EF	-	DS	-	-	RP	-	-	-
Quedara basiflava ***	Yellow-Base Tree Flitter	a	b	c	d	e	f	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Salanoemia sala	Maculate Lancer	-	-	-	d	e	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Sarangesa dasahara	Common Small Flat	a	b	c	d	e	f	g	h	-	j	k	l	m	n	EF	GL	DS	-	SC	RP	-	-	-
S. purendra	Spotted Small Flat	-	-	c	d	e	f	g	h	-	-	k	l	m	n	-	-	DS	-	-	-	-	-	-
Sovia hyrtacus ***	Bicolour Ace	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Spialia galba	Indian Grizzled / Indian Skipper	a	b	c	d	e	f	g	h	i	-	k	l	m	n	-	GL	-	-	-	-	-	-	-
Suastus gremius	Indian Palm Bob	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	AG	UA	HS
S. minutus	Small Palm Bob	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-
Tagiades gana	Immaculate/Large/Suffused Snow Flat	a	b	c	d	e	f	g	h	-	j	-	-	-	-	EF	-	-	-	-	-	-	-	-

Appendix 2. ***Continued.***

FAMILY/Species *	COMMON NAME	LATITUDINAL ZONES **														HABITAT PREFERENCE **									
T. japetus	Common/Ceylon Snow Flat	a	b	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	-
T. litigiosa	Water Snow Flat	a	b	c	d	e	f	g	h	i	j	k	-	-	-	EF	-	DS	-	-	-	-	-	-	-
Tapena twaithesi	Angled Flat / Black Angle	-	-	c	d	e	-	g	h	-	-	-	l	m	n	EF	-	DS	-	-	RP	-	-	-	-
Taractrocera ceramas	Tamil Grass Dart	-	-	c	d	e	f	g	h	-	j	k	l	m	n	-	GL	-	-	-	-	AG	-	-	-
T. maevius	Common Grass Dart	a	b	c	d	e	-	g	h	i	-	-	l	-	-	-	GL	-	-	-	-	-	-	-	-
Telicota ancilla	Dark Palm Dart	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	SC	-	-	-	-	-
T. colon	Pale Palm Dart	a	b	c	d	e	-	g	h	-	j	k	l	m	-	EF	-	DS	-	SC	-	-	-	-	-
*Thoressa astigmata****	Unbranded Ace	-	-	c	d	e	-	g	h	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	-
*T. evershedi ****	Evershed's Ace	-	-	c	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	-
*T. honorei ****	Madras Ace	-	-	c	d	e	-	g	h	-	-	k	-	-	-	EF	-	-	-	-	-	-	-	-	-
*T. sitala ****	Sitala Ace	-	-	-	d	-	-	-	-	-	-	-	-	-	-	EF	-	-	-	-	-	-	-	-	-
Udaspes folus	Grass Demon	a	b	c	d	e	f	g	h	i	j	k	l	m	n	EF	-	DS	-	-	RP	-	-	-	-

* Taxonomic status as per Kunte (2008b) and Ghorpade & Kunte (2010).
** Key: a = 8-9°N, b = 9-10°N, c = 10-11°N, d = 11-12°N, e = 12-13°N, f = 13-14°N, g = 14-15°N, h = 15-16°N, i = 16-17°N, j = 17-18°N, k = 18-19°N, l = 19-20°N, m = 20-21°N, n = 21-22°N, EF = evergreen forest, GL = grassland, DS = deciduous, DE = degraded, SC = scrubs, RP = riparian patches, AG = agricultural lands, UA = urban areas, HS = hill slopes.
*** Western Ghats endemic species.